

WHAT IS CLAIMED IS:

1. An objective lens for an optical disk, comprising
a bi-aspherical single lens having a numerical aperture of
5 0.7 or more, wherein a center thickness of the lens is more
than a focal distance.

2. The objective lens for the optical disk according
to claim 1 wherein an image forming magnification in a design
10 reference wavelength is 0 times.

3. The objective lens for the optical disk according
to claim 1 wherein the design reference wavelength is shorter
than 0.45 μm .
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4. The objective lens for the optical disk according
to claim 1 wherein the focal distance is shorter than 4.0 mm
and longer than t represented by the following equation:

$$t = d/n + 0.9 \text{ (mm)},$$

20 in which d denotes a thickness of the optical disk, and
 n denotes a refractive index of the optical disk.

5. An objective lens for an optical disk, comprising
a single lens having at least one surface formed in an
25 aspheric shape and having a numerical aperture of 0.7 to 0.8
and an operation distance of 0.2 mm or more, and satisfying
the following condition:

$$0.85 < d_1/f < 1.5;$$

$$0 > d_1/R_2 > -0.7; \text{ and}$$

30 $n > 1.6,$

in which f denotes a focal distance of the lens, d_1
denotes a center thickness of the lens, R_2 denotes a curvature
radius in a vertex of the lens on an optical disk side, and
 n denotes a refractive index of the lens.

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6. The objective lens for the optical disk according to claim 5 wherein the focal distance is 2.2 mm or less.

7. The objective lens for the optical disk according to claim 5 wherein a thickness of a transmission layer of the optical disk is 0.3 mm or less.

8. An objective lens for an optical disk, comprising a single lens having at least one surface formed in an aspheric shape and having a numerical aperture of 0.78 or more, and satisfying the following condition:

$$\begin{aligned}d_1/f &> 1.2; \\0.65 &< R1/f < 0.95; \\|R1/R2| &< 0.7; \text{ and} \\n &> 1.65,\end{aligned}$$

in which f denotes a focal distance of the lens, d_1 denotes a center thickness of the lens, $R1$ denotes a curvature radius in a vertex of the lens on a light source side, $R2$ denotes a curvature radius in a vertex of the lens on an optical disk side, and n denotes a refractive index of the lens.

9. The objective lens for the optical disk according to claim 8 wherein the operation distance is 0.3 mm or more.

10. The objective lens for the optical disk according to claim 8 wherein a thickness of a transmission layer of the optical disk is 0.3 mm or less.